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pare the deep water Echinoids to the Cretaceous, and those of intermediate depths to Tertiary genera. It would seem, therefore, if the latter be true, that, *a priori*, the former would acquire a still higher degree of probability, so far as the agreement of the succession in time and depth is concerned.

TRANSACTIONS OF THE CHICAGO ACADEMY OF SCIENCES.*—This part completes the first volume of "Transactions" and in interest and value, and the beauty of the plates, fully maintains the high standard of the preceding part. The plates, which are costly, are presented by the Trustees of the Academy, an evidence of their immediate interest in the scientific and literary reputation of their city. Nearly half of the volume is devoted to a biography of Robert Kennicott, the first Director of the Academy, from the pen of Dr. Stimpson, his successor, and the editor of the present volume. It will be read with great interest as the record of a daring explorer and admirable field naturalist.

Dr. J. W. Foster contributes an exceedingly interesting paper "On the Antiquity of Man in North America." Among the proofs of his great antiquity he claims that "the discovery (by Professor Whitney) of a human skull in California during the past season, buried deep in the gold drift, and covered with five successive overflows of lava, carries back the advent of man to a period more remote than any evidences thus far afforded by the stone implements in the drift of Abbeville and Amiens, in the valley of the Somme, or the human skeleton in the loess of the Rhine; and although the fossil elephant (*E. primigenius*) existed in Europe during the glacial epoch, and survived through the valley-drift and loess (which I think may be regarded as contemporary, though different in the form of the materials, and indicating a difference in the transporting power of the current), this association of the remains of the elephant and man has not thus far been found to exist in the purely glacial deposits." He also cites the statement of the late Dr. Koch, that in connection with the remains of the Mammoth found in the Osage valley of Missouri, "were found flint arrowheads and remains of charcoal, as though the aborigines had attacked and destroyed the animal when mired. This statement was received at the time, by the scientific world, with a sneer of contempt. Last spring I questioned him as to the possibility of his having been mistaken, when he assured me, in the most solemn and emphatic manner, that it was true."

He describes the remains of the mound builders, figuring various implements, and recapitulates the evidence of their "advance in civilization beyond a mere barbaric race," as drawn from their textile fabrics, comprising cloth "possessing an uniform and well twisted thread, coarse, and of a vegetable fibre, allied to hemp," and "regularly spun with an uniform thread, and woven with a warp and woof." It was taken from two

* Vol. i, Part II. Chicago, 1869. Royal 8vo, pp. 133 to 337. With a portrait and thirteen plates, mostly colored.

mounds in Ohio. He closes with a chapter on the "Parallelism as to the Antiquity of man on the two Hemispheres." The remaining articles are "Descriptions of certain Stone and Copper Implements used by the Mound Builders," by J. W. Foster, LL.D. "List of the Birds of Alaska, with Biographical Notes," by W. H. Dall and H. M. Bannister. "On Additions to the Bird Fauna of North America, made by the Scientific Corps of the Russo-American Telegraph Expedition," by S. F. Baird, and "A preliminary List of the Butterflies of Iowa," by S. H. Scudder.

GEOLOGY OF THE MISSOURI RIVER VALLEY.*—This is the final report of the interesting series from the able hands of Drs. Meek and Hayden, which have been already published. This Report also includes one made by Dr. Hines on a portion of the route, and another by Professor Newberry, on the Cretaceous and Tertiary plants, already reviewed in the NATURALIST. A careful perusal of the latter, and of Dr. Hayden's chapter on the Physical Geography of the region surveyed would give many of our readers new ideas with regard to their own country. The typographical errors in the work are numerous, since it was printed during the absence of the author, who read no proof of it. The historical introduction reviews the labors of previous explorers, and contains interesting remarks with regard to maps. These are especially opportune as drawing attention to the very fine specimen of map printing which is attached to the present report. The colors are excellent and its size and variety of details gives one a very clear idea of the geological structure of the Great Missouri Valley.

The chapter on physical geography contains a resumé of the results of the barometrical profiles run by the different western government expeditions, showing the general rise of the country west of St. Louis, to the base of the Rocky Mountains. Dr. Hayden regards the whole country west of the Mississippi as a vast plateau, which was gradually elevated to its present height, the strain bursting the central axis of the plateau and giving birth to the numerous chains or parallel ranges of the Rocky Mountains. Dr. Hayden describes only two types of these mountains, those having a granite nucleus and regular outline, and those composed of erupted rocks, which "are very rugged in their outlines and irregular in their trend." The author regards the Black Hills as an example of the regular type, and describes the stratified rocks as lying against the nucleus, or kernel, of granite without a break or any unconformability on either side of the axis of elevation to the latest period of the Cretaceous formation." From these facts we draw the inference that prior to the elevation of the Black Hills, which must have occurred after the deposition of the Cretaceous rocks, all of these formations presented an unbroken continuity over the whole area occupied by these mountains. This is an

* Geological Report of the Exploration of the Yellowstone and Missouri Rivers, by Dr. F. V. Hayden, assistant under the direction of Captain (now Lieut. Col., and Brevet Brig. General) W. F. Raynolds. 1859-60. Washington, 1869. 8vo, pp. 174.